REMARKS

Claims 1-18 are pending in this application.

Claims 1-3, 5-9, 11-18 are rejected.

Claim 4 and 10 are objected to as being dependent upon a rejected base claim.

Claim 1, 4, 6, 13 and 15 are amended.

Claims 16-17 are canceled.

Claims 4, 6, 13 and 15 have been amended to eliminate multiple ranges.

35 USC § 112, second paragraph

The Examinar has rejected claims 16 and 17 under 35 USC 112, second paragraph. Applicants have canceled claims 16 and 17. Therefore the rejection is overcome.

35 USC § 102(b)

Claims 1-3, 5-6, 8-9, 11-15 and 18 are rejected under 102(b) as being anticipated by Li bassi et al, EP 0386650. The Examiner states that Li Bassi et al teaches aqueous dispersion systems of photoinitiators similar to the instant invention. Applicants respectfully disagree.

Example 1 of EP0 386 650 specifies a disperse system containing ESACURE KIP and water. Ethylene oxide emulsifiers are added to 65 parts of ESACURE KIP at 75°C. ESACURE KIP is a liquid at 75°C (see product data sheet enclosed). To the homogeneous solution are added 50 parts of water and 10 parts of SARTOMER SR 344, which is also a liquid (see enclosed product bulletin). In other words, the photoinitiator is heated to above its melting point, emulsifiers are added and the solution is then mixed with a dispersing medium. The two liquids, ESACURE KIP and SARTOMER SR 344, are emulsified to obtain an emulsion.

As quoted in Example 1 "the suspension is grinded for 10 minutes in a colloidal mill cooling from 75°C to 30°C". The storage stability of the disperse system is achieved using colloid mills or similar special equipment subjecting the admixture to severe shear conditions. EP 0386650 use of the phrase "the suspension is grinded" is incorrect. Please see the enclosed Table 1 of Ullmann`s encyclopedia of industrial chemistry 1999, Chapter "Disperse Systems" which properly defines an emulsion as a liquid/liquid dispersion and a suspension as a liquid/solid dispersion. Example 1 of EP0 386 650 specifies at 75°C a liquid/liquid system, which is an emulsion. Two liquids are mixed using an Ultraturrax mill. There in no grinding of particles but a dispersion of liquids only.

As mentioned in Ullmann`s encyclopedia of industrial chemistry, literature often fails to make a precise distinction between *dispersions* and *suspensions.* In describing disperse systems, the term *dispersion* should be used as the generic term, with solid/liquid systems then being described as *suspensions.*

EP0 386 650 teaches aqueous disperse systems of photoinitiators, but does not teach liquid/solid systems or suspensions prepared by a grinding step. In all the examples of EP '650 a homogenous solution of a photoinitiator is prepared first. Water is added to the solution and the dispersing process is an emulsification and not a grinding as in the instant invention.

The present invention concerns the system liquid/solid suspensions prepared by grinding.

As described on page 11 of the instant disclosure, the suspensions are prepared by mixing together the mono- or bisacylphosphine oxide photoinitiator (a solid), a dispersant and water. The mixture is then first stirred until the solid material has been dispersed as uniformly as possible in the aqueous phase. After the first step of mixing the components, the mixture is, for example, coarsely ground in a further step (2) to a particle size of approximately from 50 to 150 µm, Finally, the particle size of the solid in the suspension according to the invention is advantageously brought to particles < 12.0 µm. by a fine-grinding step (3).

Applicants have amended claim 1 to include the limitation <u>wherein the particle size of the solid material in the suspension is less than 12 µm</u> to more particularly point out and distinctly claim their invention . The amendment is supported by claim 10. The present invention is concerned with the problem of providing a stable aqueous suspension (solid/liquid) due to milling or grinding of a water insoluble photoinitiator in water, whereas EP0 386 650 is concerned with the problem of providing a

stable aqueous dispersion via an emulsification step (liquid/liquid during the process of making the dispersion). Since EP '650 does not contain all the elements of the instant invention, it does not anticipate. No new matter has been added.

35 USC § 103(a)

Claim 7 is rejected under 35 USC 102(b) as anticipated by or in the alternative, under 35 USc 103 (a) as obvious over Li Bassi et al taken with teaching reference. The argument above effectively rebuts the 102(b) rejection of claim 7.

However, in order to determine the issue of obviousness, it is necessary to establish whether the skilled person starting from EP0 386 650 would have expected a stable aqueous suspension of mono- or bisacylphosphine oxide photoinitiator particles to be obtained by replacing the shearing step of EP0 386 650 by a grinding step, especially a separate fine grinding step. There is no suggestion in EP0 386 650 of replacing a liquid/liguid system with a solid/liquid one. The process of making an emulsion and making a disperse suspension are different concerning the equipment used as well as the emulsifiers or dispersants used. Dispersants are used to support the milling or grinding step and to stabilize the resulting dispersion which is by definition a suspension.

In addition Applicants' process includes particle size control. The fine-grinding is continued up to a particle size smaller than 12µm. The know-how is how to grind the photoinitiator to such a particle size and to stabilize the resulting suspension against reagglomeration by use of suitable equipment and dispersants. There is no hint of solving this problem in EP '650.

Reconsideration and withdrawal of the rejection of claims 1-3, 4-10, 11-15 and 18, is respectfully solicited in light of the amendments and remarks *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,

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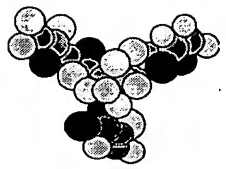
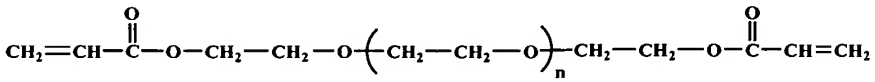
Enclosures: Petition for one month extension, Product Bulletin for SARTOMER SR-344, published 5/99, Product Bulletin for ESACURE KIP published 12/98, ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY, "Disperse Systems", published 1999.

SARTOMER
Oaklands Corporat C nter
502 Thomas Jones Way
Exton, PA 19341
(610) 363-4100 / 1-800-SARTOMER (Toll Free)



product bulletin: SR-344

POLYETHYLENE GLYCOL (400) DIACRYLATE



DESCRIPTION
SR-344, polyethylene glycol (400) diacrylate, is a low skin irritation, water-soluble monomer that produces soft, flexible free-radically cured flexible films.

PRODUCT HIGHLIGHTS
Water-soluble
Produces soft, flexible films
Low skin irritation

PERFORMANCE PROPERTIES
Chemical resistance
Flexibility
Adhesion
Low shrinkage
Impact strength

SUGGESTED APPLICATIONS
Adhesives
Glass, optical, plastic, metal coatings
PVC floor, wood, paper coatings
Concrete polymers
Inks
Photopolymers

SR-344

TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Functionality	2
Appearance	Clear liquid
Inhibitor, ppm.	490 MEHQ
Solvent, wt.%	0.1
Water, wt.%	0.2
Acid, wt.%	0.015
Color, APHA (G=Gardner scale)	35
Specific Gravity @ 25 °C	1.117
Viscosity, cps.	57 @ 25C
Refractive Index	1.4655
Surface Tension, dynes/cm.	42.6
Tg, °C	3
Molecular Weight	508

2051 R. 5/99

ULLMANN'S ENCYCLOPEDIA OF INDUSTRIAL CHEMISTRY; SIXTH EDITION

1999 ELECTRONIC RELEASE

Disperse systems

1. Terminology

If two or more phases that are insoluble or only slightly soluble are finely distributed in one another, the term *disperse system* or, more simply, *dispersion* is used. The continuous, or external phase is termed the *dispersion phase* or *dispersion medium,* while the substance (finely) distributed in it is termed the *internal phase* or *dispersed phase.* The preparation of a dispersion is known as *dispersing,* and the products that are able to promote or stabilize the formation of a dispersion are termed *dispersants* [1][2][3].
Table (1) lists disperse systems on the basis of the state of aggregation of the external and internal phases [4], [5]. Unlike true solutions, the disperse systems are termed *sols,* and this term is qualified on the basis of the dispersion medium used. If the latter is a gas, the sol is described as an *aerosol;* if liquids are used, the sol is described as a *lyosol;* and if a solid is used, the sol is de-scribed as a *solid sol.* In describing the solid sols, the establishment of concepts is difficult since there are no particles in the sense of kinetic entities and often not even any clearly defined interfaces.
Literature often fails to make a precise distinction between *dispersions* and *suspensions.* In describing disperse systems, the term *dispersion* should be used as the generic term, with solid/liquid systems then being described as *suspensions.*

[1] *Vokabularium von Tensiden (Tenside vocabulary),* 2nd ed., C.I.D.-Commission de Terminologie, Paris 1972.
[2] DIN 53 900, July 1972 issue.
[3] B. Koglin, *Chem. Ing. Tech.* **46** (1974) 720.
[4] J. Stauff: *Kolloidchemie (Colloid Chemistry),* Springer Verlag, Berlin 1960.
[5] R. Menold, *Phys. Bl.* **33** (1978) 203.

Table 1

Disperse systems (sols)	Dispersion medium (continuous phase)	Dispersed substance (dispersed phase)	Description
Aerosols	gas	gas	
	gas	liquid	mist
	gas	solid	smoke
Lyosols	liquid	gas	foam
	liquid	liquid	emulsion
	liquid	solid	suspension (dispersion)
Solid sols	solid	gas	solid foam
	solid	liquid	solid emulsion
	solid	solid	solid suspension